REMARKS

Claims 1-22 are pending.

Claims 1-22 were rejected by the Examiner.

Claim 8 was objected to by the Examiner.

Claims 2, 8-9, and 16-22 have been cancelled.

Claims 23-30 have been added.

No new subject matter has been added.

The Applicant respectfully requests reconsideration of claims 1, 3-7, 10-15, and 23-30.

Claim Rejections - 35 U.S.C. § 101

Claims 16-21 have been rejected under 35 U.S.C. § 101 because the claimed invention is directed to non-statutory subject matter. Claims 16-21 have been cancelled.

Claim Rejections - 35 U.S.C. § 103

Claims 1, 8-11, 15, 16, 18-20 and 22 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Duffield, U.S. Patent No. 6,873,600 (hereinafter Duffield) in view of Blachman et al., U.S. Patent No. 4,472,784 (hereinafter Blachman).

Claims 2, 6, 7, 12-14, 17 and 21 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Duffield in view of Blachman, and further in view of Russell, U.S. Patent No. 3,761,696 (hereinafter Russell).

Claims 16, 18, 19, 20 and 22 are rejected under the same rationale as claims 1, 3, 4, 5, and 8 because they teach the computer readable medium having stored thereon instructions for the method of claims 1, 3, 4, 5 and 8.

The Applicant respectfully traverses the rejections.

With respect to claim 1, the Examiner states that Duffield at column 7, lines 50-51 discloses randomly shuffling a packet index order. However, column 7, lines 50-52 discloses "obtaining a unique packet identifier, or label, for each sampled packet within the domain and within a measurement period." Nowhere does Duffield teach shuffling a packet index order, much less randomly shuffling a packet index order. Conversely, Duffield teaches the use of "a deterministic hash function over the packet's content . . . to collect trajectory samples of a subset of packets." (Duffield, column 7, lines 31-36). Indeed, the sampling process as taught by

Duffield is deterministic by nature, though Duffield maintains that it "resemble[s] a random sampling process." (Duffield, column 7, lines 41-43). Therefore, Duffield fails to teach randomly shuffling a packet index order.

Continuing with claim 1, the Examiner states that Duffield does not expressly teach pseudo-randomly shuffling a packet index, but the Examiner states that Blachman discloses this element at column 8, lines 63-67. But Blachman's disclosure ends at column 8, line 24; therefore, it teaches nothing at column 8, lines 63-67. Thus, as pertaining to claim 1, the 103(a) rejection appears to be defective. To the best of the Applicant's understanding, the Examiner intended to cite column 8, lines 63-67 of Duffield as teaching pseudo-randomly shuffling a packet index order. However, at column 8, lines 63-67, Duffield teaches collecting labels from a pseudorandom subset of all packets traversing a domain. If the labels taught in Duffield are the packet indexes of claim 1, then an order of the packet indexes is not shuffled, much less pseudo-randomly shuffled as taught in claim 1. Rather, Duffield teaches deterministically collecting and identifying, but not shuffling, a set of labels based on a hash of each packet's invariant content. (Duffield, column 8, lines 63-67, column 9, lines 11-46). Furthermore, claim 1 requires "pseudo-randomly shuffling a packet index order corresponding to a second number of packets, and determining a first number of packets sampled from the pseudo-randomly shuffled second number of packets"; in contrast, Duffield teaches a pseudorandom subset collected from a non-pseudorandom second number of packets (i.e., all the packets traversing the domain). Duffield, column 8, lines 63-65. Thus, Duffield fails to teach each element of claim 1, and appears to contradict claim 1.

Claims 3 and 4 have been amended to include the limitations of claim 2, and claim 2 has been cancelled. Claim 3, as amended, requires "wherein said second number of packets is a power of two." The Examiner states that Duffield, at column 8, lines 51-60 teaches this limitation; however, Duffield teaches that a packet "trajectory forms a tree rooted at the ingress node," and fails to even mention the number of packets, much less that the number is a power of two. Similarly, claim 4 as amended requires "wherein the second number of packets is any positive integer number." One problem with linear feedback shift registers is that they only support numbers involving powers of two. (Present Application, page 20, lines 5-6). Figures 9A -- 9D of the present application, and the associated detailed description, discloses how any positive integer number can be used. The Examiner suggests that Duffield, at column 11, lines

65-67 teaches the same. However, this citation refers to ordering of bits within a packet and of its invariant part $\phi(X)$ as binary integers. It may be true that Duffield uses integers in certain operations, but Duffield's use of integers is unrelated, and fails to teach each of the limitations of claim 4, even when combined with Blachman and Russel.

Claim 5, as amended, requires "a method for sampling packets in a network, comprising: determining a first number of packets n to be sampled from a second number of packets N using a linear feedback shift register, wherein said second number of packets is any positive integer; partitioning said second number of packets N into a plurality of Y groups, each group being comprised of a single number or two numbers, said plurality of Y groups being equal to a largest power of two which is smaller than or equal to said second number of packets N; and

comparing said first number of packets n to said plurality of Y groups, wherein if said first number of packets n is less than or equal to said plurality of Y groups, selecting a sampling point from each group to be one of (a) said single number and (b) a number randomly selected from said two numbers." This amendment is supported by at least page 15, line 13 to page 16, line 4 of the present disclosure.

Claim 6, as amended, requires "wherein if said first number of packets n is greater than said plurality of Y groups, selecting all numbers from each group to be sampling points except one of (a) said single number and (b) said number randomly selected from said two numbers." This amendment is supported by at least page 16, lines 6-11 of the present disclosure.

Claim 7, as amended, requires the elements of claim 5 further comprising "determining which of said plurality of Y groups contains said two numbers, wherein determining comprises: taking a difference between said second number of packets N and said plurality of Y groups to determine a total of groups containing said two numbers; randomly selecting a number X between zero and Y-1; comparing said randomly selected number X, said second number of packets N, and said plurality of Y groups to determine which of said plurality of Y groups contains said two numbers; and selecting said sampling point responsive to said comparing." This amendment is supported by at least page 16, lines 13-18 of the present disclosure.

Claims 8-9 have been cancelled.

Claim 10, as amended, requires "an apparatus for sampling packets comprising a first packet index sequence comprising a plurality of N packets ordered sequentially; a randomly shuffled packet index sequence comprising said plurality of N packets, wherein said randomly

shuffled packet index sequence comprises each of said N packets of said first packet index sequence in a randomly shuffled order, and wherein each packet index of said randomly shuffled packet index sequence corresponds to a different packet index of said first packet index sequence; and a circuit structured to randomly select a number S which is less than or equal to N and to sample a plurality of n packets from said plurality of N packets responsive to said randomly selected number S." This amendment is supported by at least page 10-13 and figures 5-8 of the present disclosure.

Claim 11, as amended, requires "wherein if S is less than or equal to one packet index of said randomly shuffled packet index sequence, and said one packet index is less than or equal to $(S + n - 1)$, said circuit is structured to sample a packet corresponding to said one packet index." This amendment is supported by at least page 10-12 of the present disclosure.

Claim 12, as amended, requires "wherein said circuit is structured to detect a wrap condition if said one packet index is less than or equal to $(S + n - 1 - N)$."

Claim 13, as amended, requires "wherein said circuit is structured to sample said packet corresponding to said one packet index responsive to detecting said wrap condition." Amendments to claims 12 and 13 are supported by at least page 12 of the present disclosure.

Claim 14, as amended, requires "wherein said randomly shuffled packet index sequence is used for successive sets of N packets." This amendment is supported by at least page 13, lines 16-17 of the present disclosure.

Claim 15, as amended, requires "wherein said randomly shuffled packet index sequence is reshuffled for every N packets." This amendment is supported by at least page 13, lines 18-22.

Claims 16-22 have been cancelled.

Claim 23 is a new claim and sets forth the apparatus of Claim 10, wherein said randomly shuffled packet index sequence is shuffled using a linear feedback shift register, and wherein N is a power of two.

Claim 24 is a new claim and sets forth the apparatus of Claim 1, wherein said method for sampling packets is implemented in either hardware or software.

Claims 25-30 are new claims, which generally correspond with claims 1 and 3-7, respectively. The language of claims 25-30 overcomes any 35 U.S.C. § 101 rejection directed to non-statutory subject matter.

For the reasons cited above, the Applicant submits that claims 1, 3, and 4 are in proper form for allowance. The Applicant also submits that each of the elements of amended claims 5-7 and 10-15, and new claims 23-30, are not taught by the prior art; therefore, based on their merits, these claims are also in allowable form.
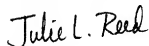
CONCLUSION

For the foregoing reasons, reconsideration and allowance of claims 1, 3-7, 10-15, and 23-30 of the application as amended is requested. The Examiner is encouraged to telephone the undersigned at (503) 222-3613 if it appears that an interview would be helpful in advancing the case.

Customer No. 20575

Respectfully submitted,

MARGER JOHNSON & McCOLLOM, P.C.

Julie L. Reed

_____
Julie L. Reed
Reg. No. 35,349

210 SW Morrison Street, Suite 400
Portland, OR 97204
503-222-3613